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LIFTING

General (Figs. 1 and 2)

Four jacking points are provided for lifting the complete aircraft; either of the two alternatives at 'B' being used in conjunction with those at 'A'.

For wheel changing, any undercarriage leg may be jacked locally as shown at 'E' and 'F'.

Steadying points are under the rear fuselage at 'C', and under each wing at Rib 15. The wing steadying points are clearly labelled 'TRESTLE HERE'.

You Must Not

1. Lift the COMPLETE aircraft by jacking at main points 'A' and 'B' without checking and, if necessary ballast-correcting the C.G. This is particularly important when heavy, normally fixed equipment or components have been removed (see Section 1-2-0, 'WEIGHT AND BALANCE').

2. Lift the COMPLETE aircraft in the open in winds of more than 35 knots.

3. Lift the COMPLETE aircraft without first tripping C/Bs of weight switch-operated circuits; these are:-

(a) Up Selection Interference Solenoid	(Panel B)
(b) Water Outlet Heater	(Panel B)
(c) Ice Detector Motor	(Panel B)
(d) Stall Warning	(Panel B)
(e) Flight Data Recorder	(Panel RB)

4. Lift the COMPLETE aircraft without first ensuring that the rudder steering valve striker arm is correctly set (see Section 1-4-0, Fig.3).

5. Lift at steady points.

6. Lift (or lower) with the brakes on.

7. Allow personnel on board until steadies are in place.

8. Lower the aircraft without undercarriage ground locks fitted.

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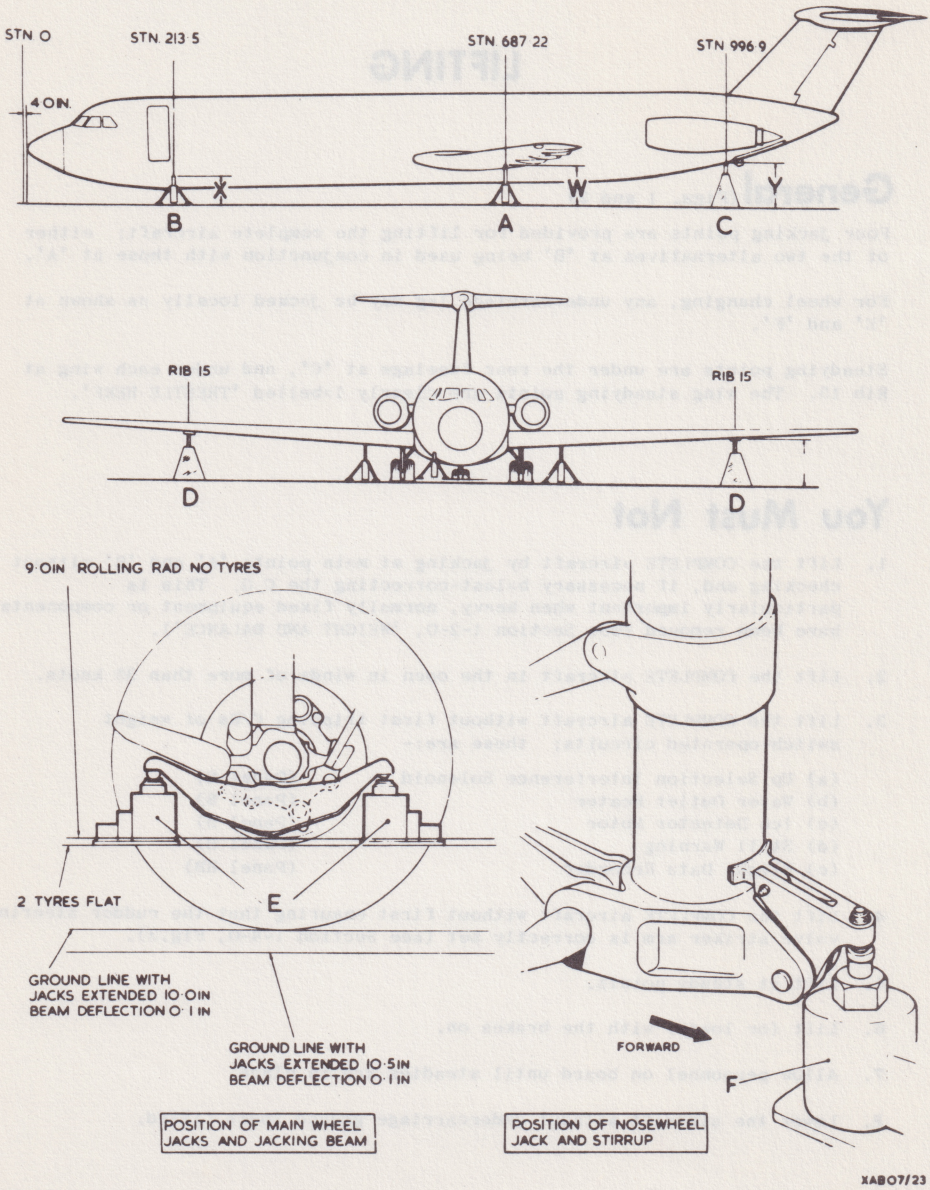

Jacking Arrangements
Figure 1

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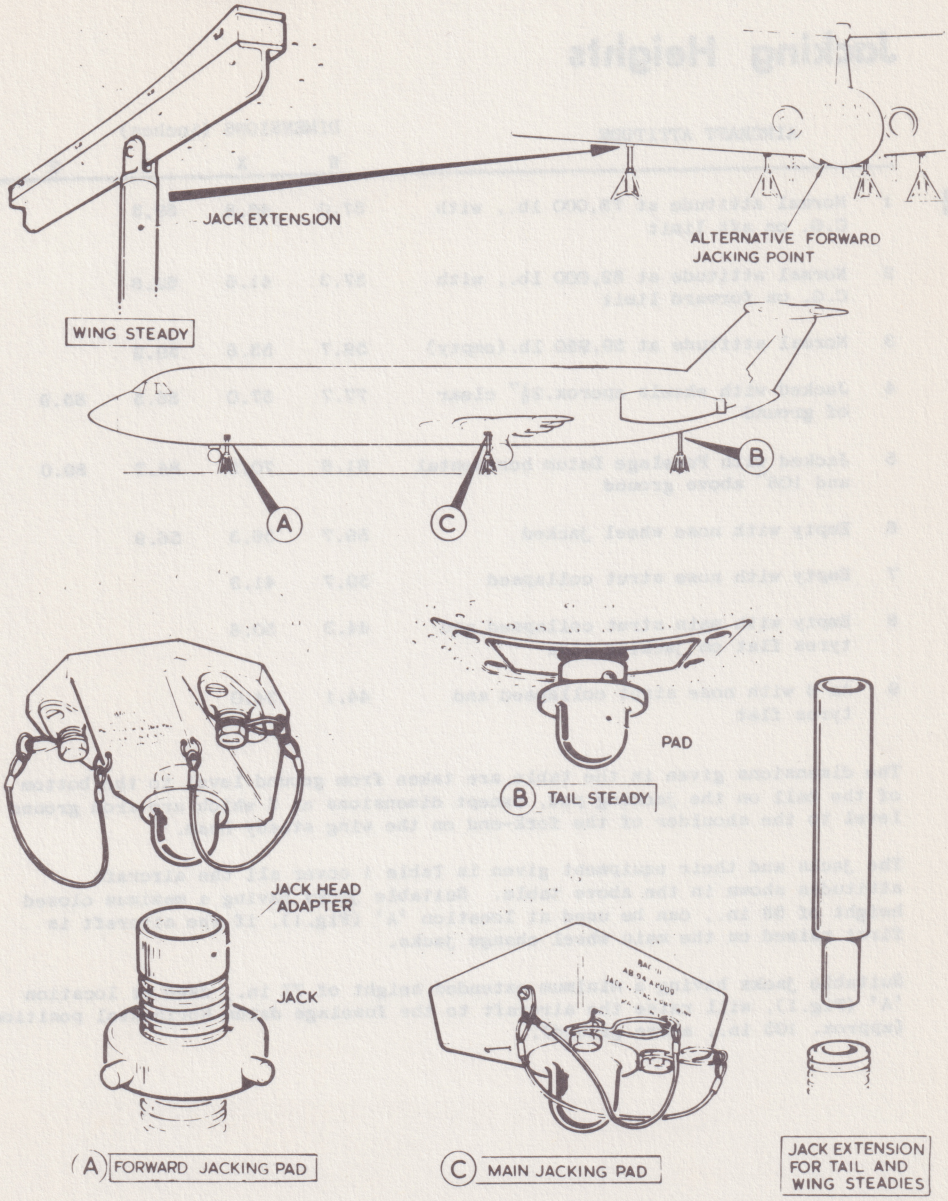

Jacking Details
Figure 2

Jacking Heights

	AIRCRAFT ATTITUDE	DIMENSIONS (inches) W	X	Y	Z
1	Normal attitude at 78,000 lb., with C.G. on aft limit	57.0	46.8	59.3	
2	Normal attitude at 82,000 lb., with C.G. on forward limit	57.3	41.6	62.8	
3	Normal attitude at 59,950 lb.(empty)	59.7	53.6	59.2	
4	Jacked with wheels aporox.2½" clear of ground	77.7	57.0	86.5	85.9
5	Jacked with Fuselage Datum horizontal and 108" above ground	81.8	70.5	84.7	89.0
6	Empty with nose wheel jacked	59.7	56.3	56.9	
7	Empty with nose strut collapsed	59.7	41.3		
8	Empty with main strut collapsed and tyres flat on jacking side	44.3	50.8		
9	As 8 with nose strut collapsed and tyres flat	44.1	34.0		

The dimensions given in the table are taken from ground level to the bottom of the ball on the jacking pad, except dimensions at Z which are from ground level to the shoulder of the fork-end on the wing steady beam.

The jacks and their equipment given in Table 1 cover all the aircraft attitudes shown in the above table. Suitable jacks having a maximum closed height of 58 in., can be used at location 'A' (Fig.1), if the aircraft is first raised on the main wheel change jacks.

Suitable jacks having a minimum extended height of 77 in., used at location 'A' (Fig.1), will raise the aircraft to the fuselage datum horizontal position (approx. 103 in., above ground).

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Jacking Equipment

LOCATION (FIG. 1)	JACK REQUIREMENTS MIN. CAPACITY (TONS)	SUITABLE EQUIPMENT	REF.NO.	REMARKS
A	17	Jack	Skyhi S.2071	
		Jack Head Adapter	AB94 4991	
		Jacking Pad	AB94A2009 (Left)	
		Jacking Pad	AB94A2010 (Right)	
B	4.5	Jack	Skyhi S.552	
		Jack Head Adapter	AB94 4991	
		Jacking Pad	AM94A101	
C	1.25	Tail Steady or	AB94A81	Jack with a max.closed height of 55 in.and a min.extended height of 85 in. will be required if extension is not used.
		Jack	Skyhi S.552	
		Extension	AB94 5349	
		Jack Head Adapter	AB94 4991	
		Jacking Pad	110079 Sht. 97	
		or		
		Jack	Skyhi S.854	
		Extension	AB94 4079	
		Jack Head Adapter	AB94 1815	
		Jacking Pad	110079 Sht. 97	
D		Wing Steady	AB94A79	
		or		
		Jack	Skyhi S.552	Jacks with a max. closed height of 62 in. and a min. extended height of 85 in.will be required if extension is not used.
		Wing Steady Beam	AB94A6729	
		Extension	AB94 5351	
		or		
		Jack	Skyhi S.854	
		Wing Steady Beam	AB94B6729	
		Extension	AB94 4079	
E	8.5	Jack	Skyhi 10-8-10.5 (2)	Used when changing wheels
		Jacking Beam	AB94A2221	
F	4.5	Jack	Skyhi S.877	
		Jacking Stirrup	AB94A2353	

NOTE: Main wheel change, tyres fully inflated. Use a single jack at the lower strut jacking position. Jack min. capacity 17 tons; max. closed height 12 in.; min. extension 8 in. max. width 6 in. A Skyhi 2019 meets these requirements.

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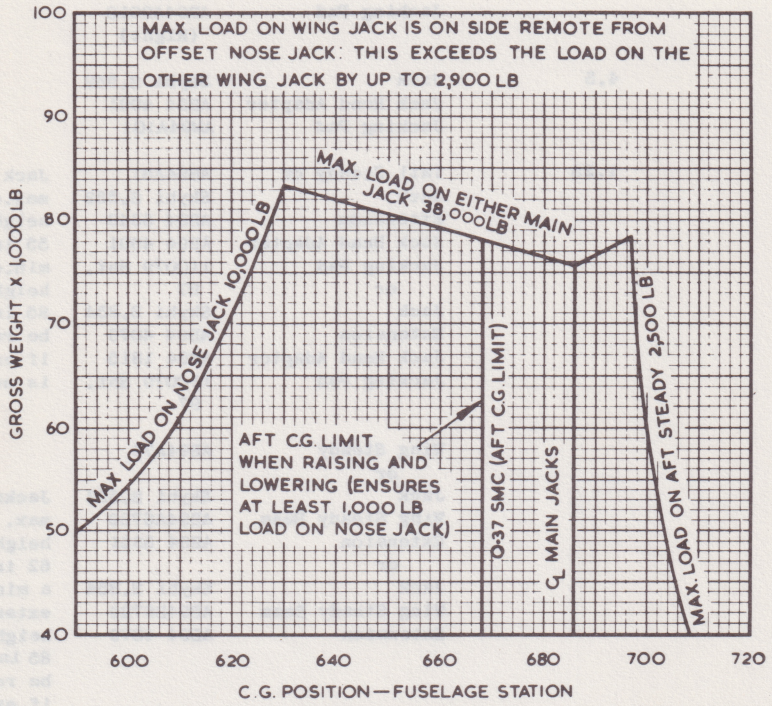
Centre of Gravity

Removal of components could move the aircraft weight C.G. outside safe limits shown on Fig.3. Consult 'Weight and Balance' (1-2-0).



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Weight/C.G. Limitations
Figure 3

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WEIGHT AND BALANCE

General

The term 'WEIGHT EMPTY STATE' defines the condition when the aircraft is structurally complete, and fully equipped to operational standard, i.e., all seats and galley units fitted. It does not include fuel.

Removal of heavy items of equipment or large components could critically affect the weight/C.G. position if the aircraft is to be jacked or towed.

Fig.1 shows the effect on the aircraft C.G. when various "blocks" of equipment or components are removed. It has been constructed in the form of a balance diagram in four parts.

Scale A is used to plot the Weight Empty and C.G. of the aircraft before equipment or components are removed.

Scale B lists the major items which, when removed, have a large effect on the C.G. Any change in the Weight or position of any of these items will invalidate its particular scale. Each division of a scale will be used once except in the case of the power plants. When both units are removed two divisions must be used.

Scale C represents ballast in 100 lb., increments which can be placed in the forward freight hold to move the aircraft C.G. forward.

Scale D is used to plot the weight empty less the weight of items removed and shows the resultant aircraft C.G.

Scales A and D, show the aft C.G. limits when the aircraft is standing on jacks or wheels. When the C.G. is forward of these limits there will be a reaction of at least 1,000 lb., on the nose jack or nose wheel respectively.

Instructions for Use

An example based on the Weight Empty (Standard) state, is shown on Fig.1.

Subtract the weight of items to be removed from the Weight Empty (Standard) and plot a line corresponding to the new Empty Weight on scale D. Plot the Weight Empty (Standard) and C.G. on scale A. From this point drop a vertical line to intersect an oblique line in the appropriate scale of scale B. Draw a horizontal line in the direction of the arrow to the adjacent oblique line. From this intersection drop another vertical line to the oblique line on the next appropriate scale. Continue this procedure until all removals within scale B are complete. The final vertical line will intersect the new Empty line on scale D at the new C.G. of the aircraft. If this C.G. is aft of the appropriate limit ballast must be added. The amount required is determined by using scale C. From the intersection of the vertical and oblique lines in this scale draw a line in the direction of the arrow until it is apparent that the C.G. will be forward of the aft

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limit. Count the number of 100 lb divisions used to determine the amount of ballast required in the forward hold. The new Weight Empty will be increased by this amount in Scale D. A vertical line drawn from scale C to intersect this line will show the new C.G.

EXAMPLE

	WT.(lb.)	X.(in.)
* WEIGHT EMPTY (STANDARD)	52,927	677.6
* Equipment or Components to be removed:		
Domestic Water	200	150.0
Flaps	549	737.6
Batteries	104	120.5
Oxygen Bottles (3 off)	90	188.7
NEW EMPTY WEIGHT	51,984	680.9

If the aircraft is to stand on wheels this C.G. is forward of the aft limit and no ballast is required.

If the aircraft is to stand on jacks the C.G. is outside the aft limit and ballast must be placed in the forward hold.

	WT.(lb.)	X.(in.)
NEW EMPTY WEIGHT	51,984	680.9
Add ballast to forward hold	1,000	337.4
REVISED EMPTY WEIGHT	52,984	674.4

* NOTE: Weights quoted in this example vary from Model-to-Model.

Reference should be made to the latest weighing report when calculating C.G. on any particular aircraft.

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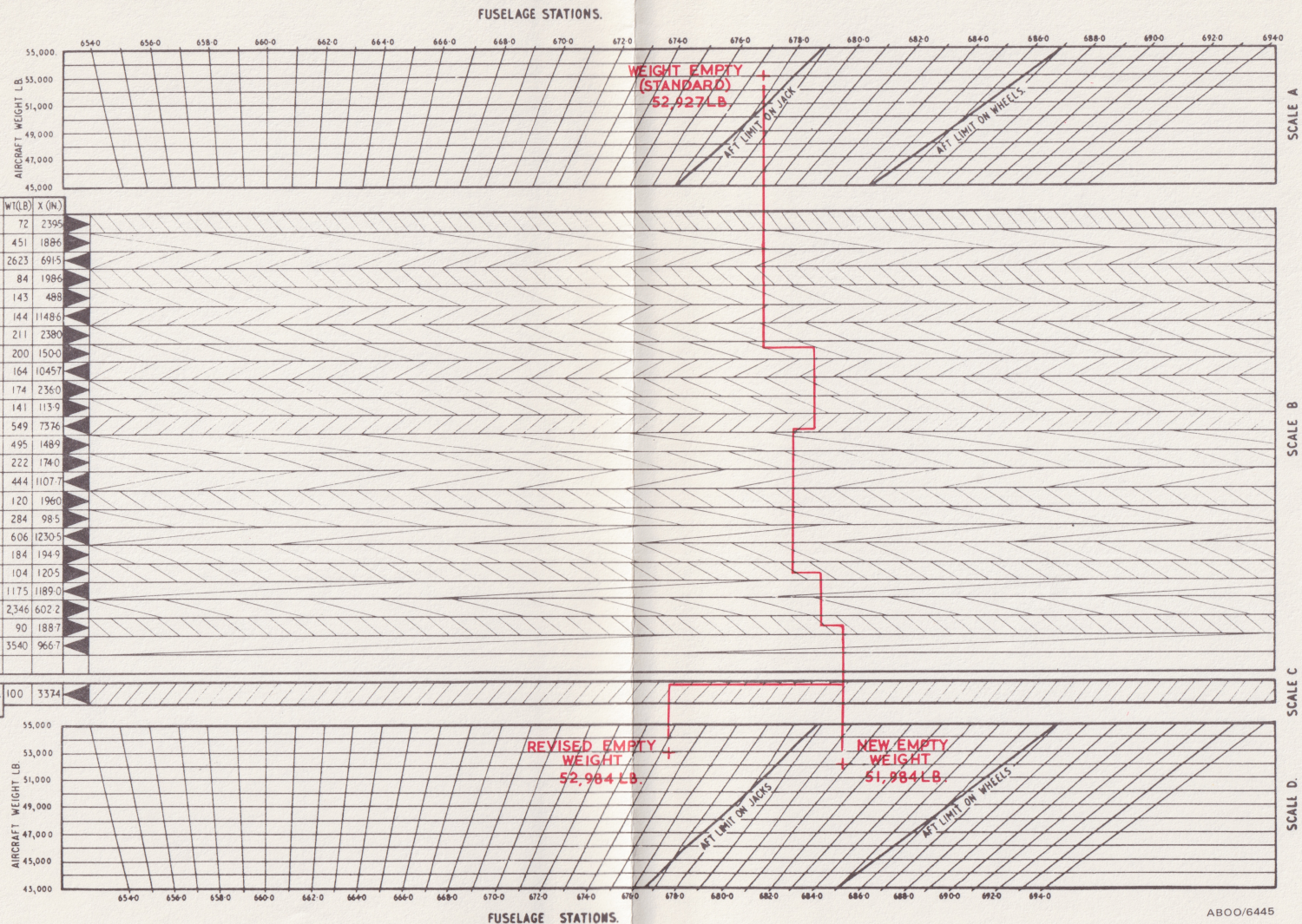
EQUIPMENT/COMPONENT REMOVAL.

EQUIPMENT/COMPONENT.	WT(LB)	X (IN)
GYRO PANEL & EQUIPMENT.	72	239·5
NOSE LANDING GEAR.	451	188·6
MAIN LANDING GEAR.	2623	691·5
SERVICE DOOR.	84	198·6
RADOME AND SCANNER.	143	48·8
RUDDER.	144	1148·6
GALLEY UNIT No 2A.	211	238·0
DOMESTIC WATER.	200	150·0
VENTRAL DOOR & AIRSTAIRS.	164	1045·7
GALLEY UNIT No. 2.	174	236·0
FLIGHT DECK SEATS.	141	113·9
FLAPS.	549	737·6
RADIO RACK EQUIPMENT.	495	148·9
GALLEY UNIT No.1	222	174·0
AUXILIARY POWER UNIT.	444	1107·7
FWD. ENTRANCE DOOR.	120	196·0
WINDSCREEN GLAZING.	284	98·5
ELEVATORS.	606	1230·5
FWD. AIRSTAIRS.	184	194·9
BATTERIES.	104	120·5
TAILPLANE & MOVING BULLET.	1175	1189·0
PASSENGER SEATS.	2,346	602·2
OXYGEN BOTTLES (3 OFF)	90	188·7
POWER PLANT (ONE SIDE)	3540	966·7
ADD BALLAST IN FORWARD HOLD (BAY 1.)	4788 LB. MAX.	100 3374

NOTE:–
FUEL LEFT IN THE AIRCRAFT MOVES THE CENTRE OF GRAVITY FORWARD AND CAN BE IGNORED PROVIDED THAT THE JACKING LIMITATIONS – (SECT. 1-1-0, FIG.3) ARE ADHERED TO.

C.G. MOVEMENT CHART.



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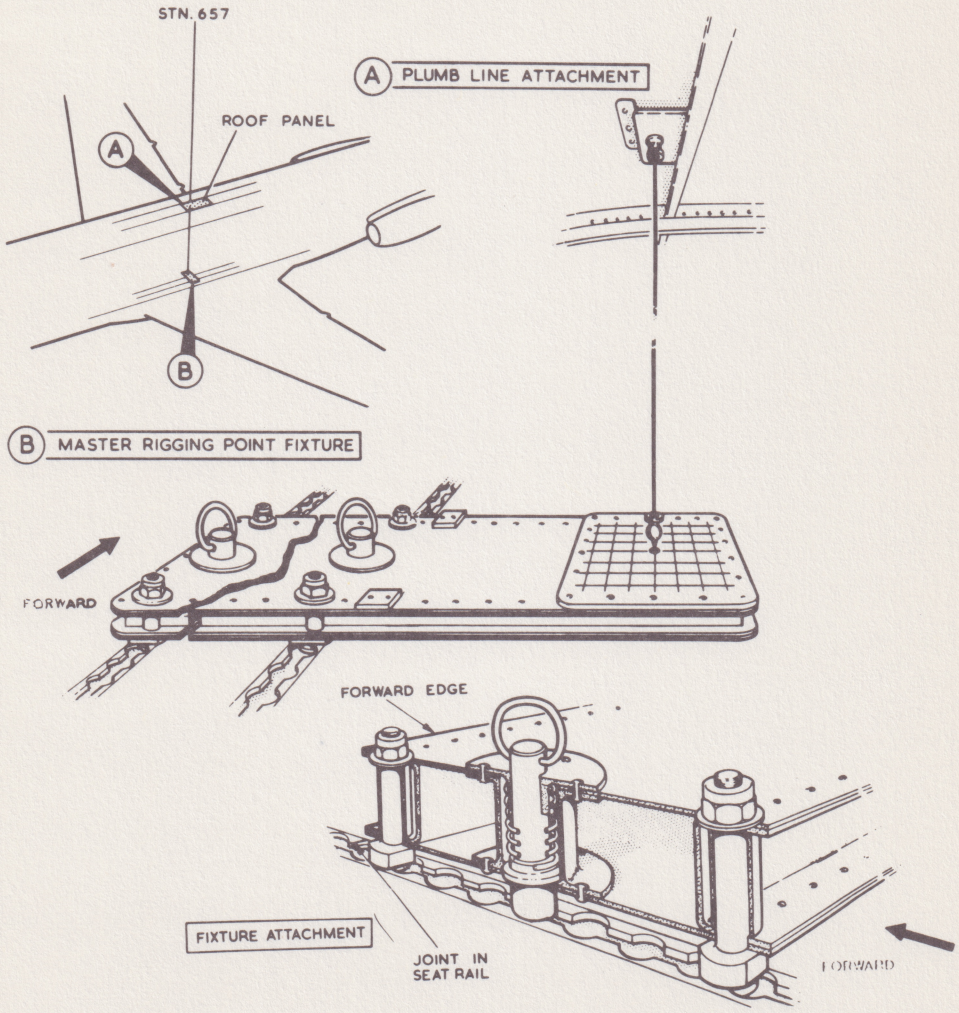
LEVELLING

The aircraft must be on a hard and even surface.
Remove seat at Stn.657, and install master rigging point fixture (AB94A37) and plumb-line as shown. Jack the aircraft as required.



Master Rigging Point Fixture
Figure 1

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TOWING

General

The aircraft can be towed (or pushed) by a towbar connected to the nose undercarriage. Alternatively, bridles (two) may be used, one connected to each main undercarriage leg.

When using bridles, two towing vehicles are required, one for each bridle.

The towing vehicle must have a towbar pull capability of 3,500 lb.(1587 kg.). The towbar must incorporate a 10,000 lb.(4536 kg.) overload device).

For bridles, the overload requirement is 12,320 lb.(559 kg.).

To enable manoeuvring in confined areas, the nose undercarriage torsion links are connected by spring-loaded quick-release pins.

When disconnected, the upper link should be lifted until retained by its spring-loaded uplock (See Fig.3).

You Can

Castor the nosewheels through 78 deg., each side of centre without damaging the undercarriage; there is a 60 deg., mark on the fuselage to warn you but, be advised - disconnect the torsion links - it is safer that way.

You Must Not

1. Tow the aircraft with large components removed, until the C.G. has been checked and, if necessary, ballast-corrected (see 'Weight and Balance', 1-2-0).

2. Push the aircraft with towbar on soft ground.

3. Steer the bridles; always use a steering arm.

4. Tow aircraft following reported violent nosewheel shimmy, until the recommended check (1-8-0), has been carried out.

5. Reset the landing gear free fall control lever, if it has been operated, until all landing gear ground locks have been fitted.

6. Tow the aircraft with the nose oleo dimension 'A' in excess of 9 inches.

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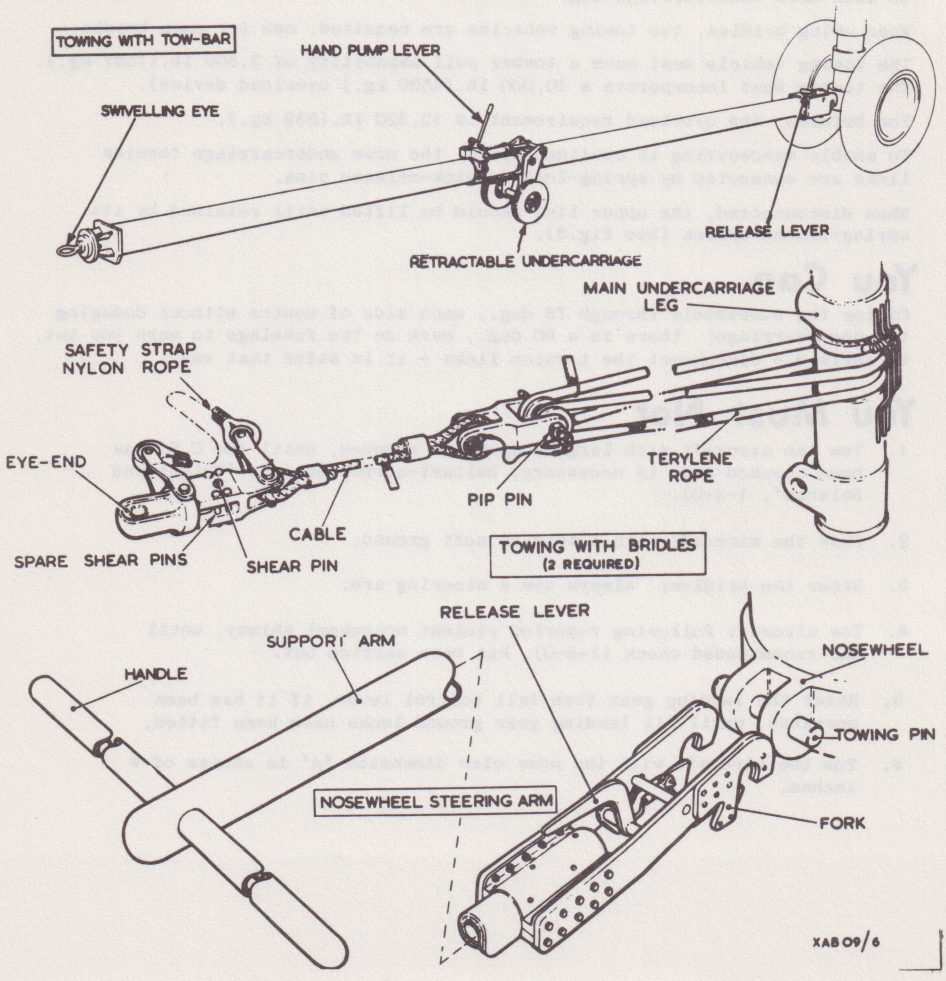
DESCRIPTION	PART NO.	SUPPLIER
Towbar	307-1	Edghill Equipment Ltd., Basingstoke, Hants, England.
Bridle	ED94A67)	B.A.C.
Steering Arm	AB94A41)	



Towing Equipment
Figure 1

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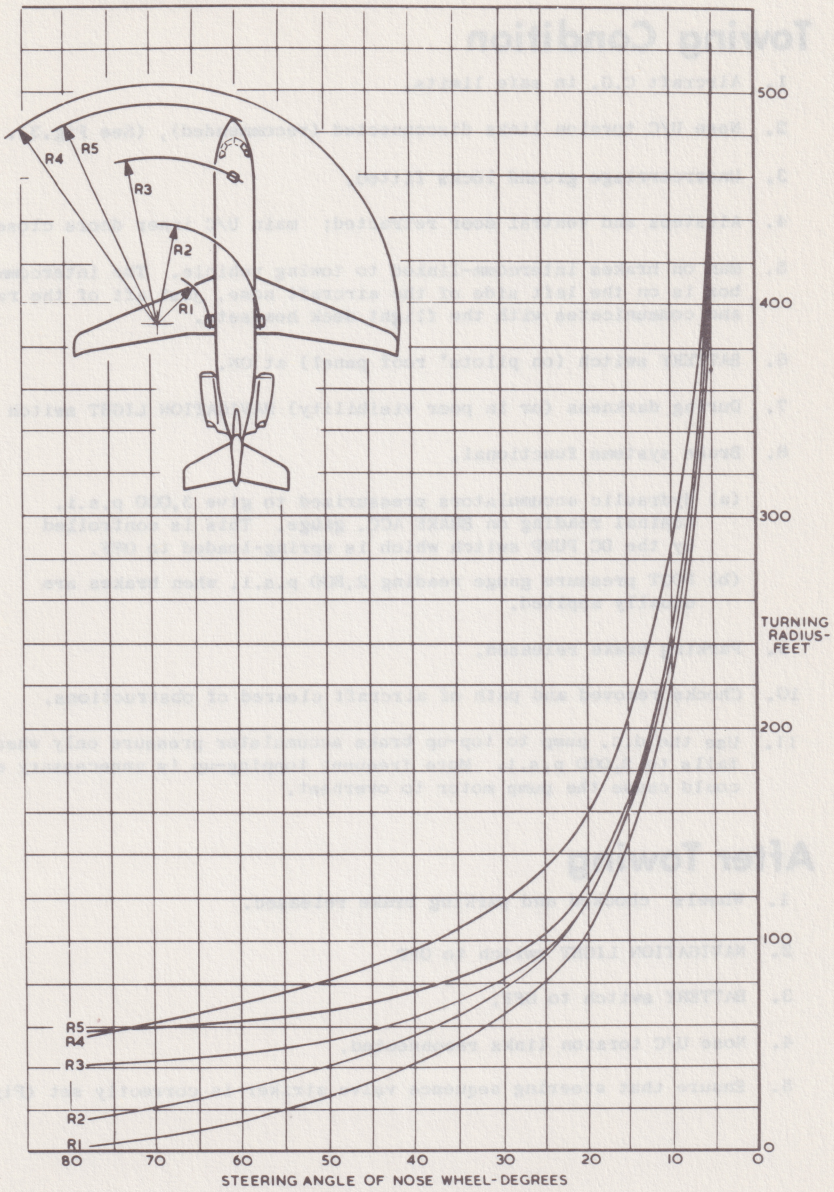

Turning Circle
Figure 2

Towing Condition

1. Aircraft C.G. in safe limits.
2. Nose U/C torsion links disconnected (recommended), (See Fig.3).
3. Undercarriage ground locks fitted.
4. Airsteps and ventral door retracted; main U/C inner doors closed.
5. Man on brakes intercomm-linked to towing vehicle. The intercomm jack box is on the left side of the aircraft nose, just aft of the radome, and communicates with the flight deck headsets.
6. BATTERY switch (on pilots' roof panel) at ON.
7. During darkness (or in poor visibility) NAVIGATION LIGHT switch at ON.
8. Brake systems functional.
   (a) Hydraulic accumulators pressurized to give 3,000 p.s.i. nominal reading on BRAKE ACC. gauge. This is controlled by the DC PUMP switch which is spring-loaded to OFF.
   (b) FOOT pressure gauge reading 2,800 p.s.i. when brakes are equally applied.
9. Parking brake released.
10. Chocks removed and path of aircraft cleared of obstructions.
11. Use the d.c. pump to top-up brake accumulator pressure only when it falls to 2,000 p.s.i. More frequent topping-up is unnecessary and could cause the pump motor to overheat.

After Towing

1. Wheels chocked and parking brake released.
2. NAVIGATION LIGHT switch to OFF.
3. BATTERY switch to OFF.
4. Nose U/C torsion links reconnected.
5. Ensure that steering sequence valve striker is correctly set (Fig.3).

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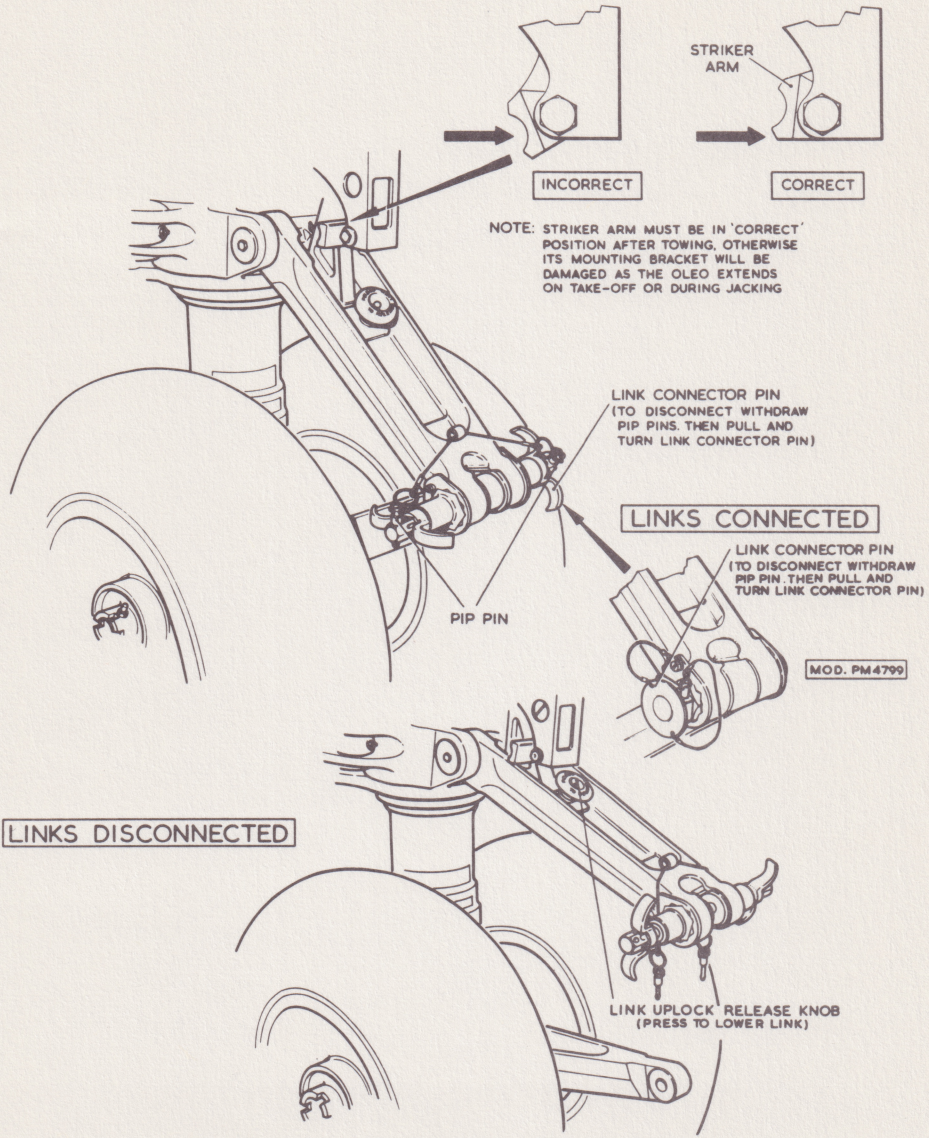

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Nose Undercarriage Torque Link Disconnect

Figure 3

PARKING AND MOORING

General

The aircraft should be weather-protected according to environmental conditions.

If parked for more than 48 hours, it must be moved to prevent formation of flat spots on the tyres.

Mooring is necessary only when a high wind exists, and will hold the aircraft in conditions up to 80 kt. (148 km/hr.) when headed into wind.

You Can

Park the aircraft in wind up to 65 kt. (120 km/hr.) with no external control surface locks fitted (the ailerons, rudder and elevators are gust-damped) but, be sure of your weather forecast.

PARKING EQUIPMENT

DESCRIPTION	PART NO.	QUANTITY
Main undercarriage ground lock	ED94A509	2
Nose undercarriage ground lock	ED94A502	1
Engine intake bung	AB94A2839	2
Static vent plug	AB94A3897	5
Static vent plug	AB94A3899	2
Jet pipe cover	ED94A511	2
Jet pipe cover	ED94A513(MOD.PM3163)	1
APU exhaust cover	ED94A743	1
Cockpit cover	AB94A3907	1
Nose undercarriage cover	AB94A3909	1
Main undercarriage cover	AB94A3911	2
Pitot head cover	AB94A3913	3
Pitot head cover	ED94A681	2
Thrust reverser covers	AM94A275 (lower left-hand)	1
	AM94A277 (lower right-hand)	1
	AB94A4693 (upper)	2
Incidence indicator cover	AB94A6247	4
Air intake blank	ED94A733	2

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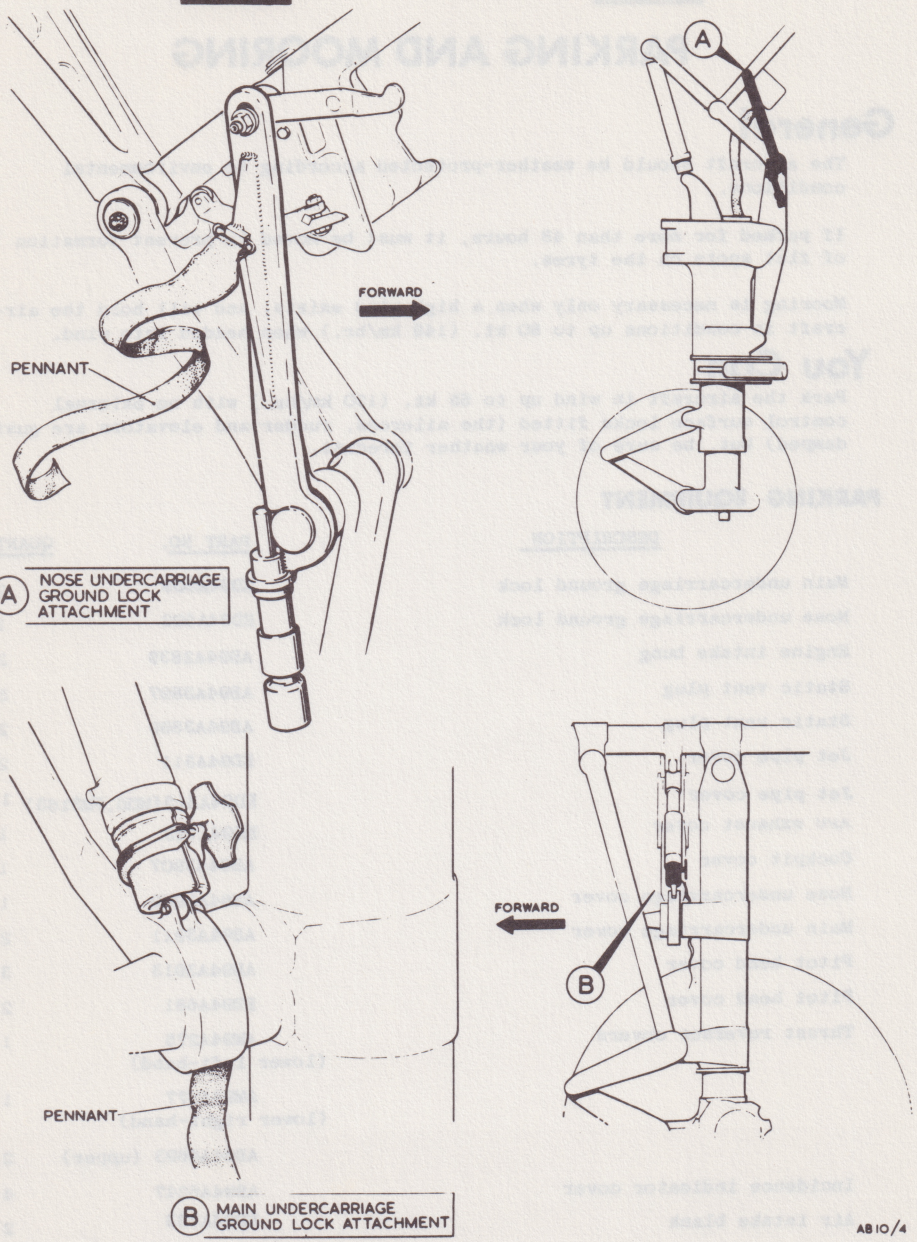

Landing Gear Ground Locks
Figure 1

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Weather Protection - Covers and Bungs
Figure 2

Parking Conditions

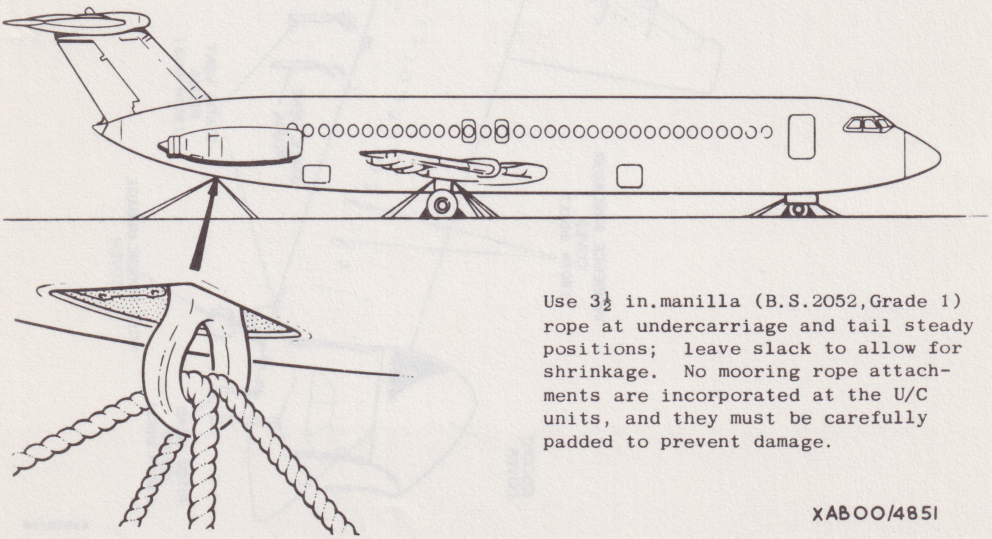
1. Aircraft headed into wind (ideally).
2. Nosewheels centralized.
3. U/C ground locks fitted (Fig.1).
4. Wheels chocked in front and behind (Fig 3).
5. Parking brake released.
6. D.V.windows and all doors and access panels closed.
7. All electrical services switched OFF.
8. Protective covers, bungs and plugs fitted (Fig.2).

In Freezing Conditions

Domestic water system drained.

Water injection system (if fitted) drained.

Mooring



Use $3\frac{1}{2}$ in.manilla (B.S.2052,Grade 1) rope at undercarriage and tail steady positions; leave slack to allow for shrinkage. No mooring rope attachments are incorporated at the U/C units, and they must be carefully padded to prevent damage.

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Mooring Arrangement
Figure 3

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EMERGENCY

General

The aircraft incorporates features which permit rapid evacuation of its occupants in the event of e.g., an emergency landing, or a serious fire during servicing/maintenance.

For fire-fighting, extinguishers and portable oxygen breathing sets are installed in readily accessible positions.

An emergency lighting system provides adequate visibility throughout the flight deck and passenger cabin.

In addition, all exits are indicated by powerful self-illuminated signs.

Exit

Is via the forward passenger, service and rear (ventral) doors; also:-

1. Flight deck D.V. windows.
2. Overwing hatches (opening inward)

Escape Ropes

Are stowed above the forward doors, overwing hatches and the flight deck D.V.windows.

Escape Slides

Are stowed on the forward doors; these are inflatable,and require no support. They must be 'armed' before opening the doors by inserting the anchorage tab into the floor attachment.

Inflation is automatic, taking approximately 4 seconds.

Rescue

Outside assistance by opening doors and hatches.

The D.V.windows cannot be opened from the outside.

Break-in areas are on top of the fuselage.

Fire Extinguishers

One CO_2 on the flight deck, usually on left console.
Two water/glycol, one in forward, one in rear vestibule.
Hold both types at an angle of 45 deg., when using.
DO NOT use water/glycol extinguishers for fighting ELECTRICAL or FLUID fires; use CO_2 directed at base of fire, and wear gloves.

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Portable Oxygen

One 'smoke set', comprising 310 litre cylinder and face mask on flight deck left console.

Two breathing sets, one adjacent to each attendant's seat, comprising 120 litre cylinder with delivery control valve.

First Aid Kits

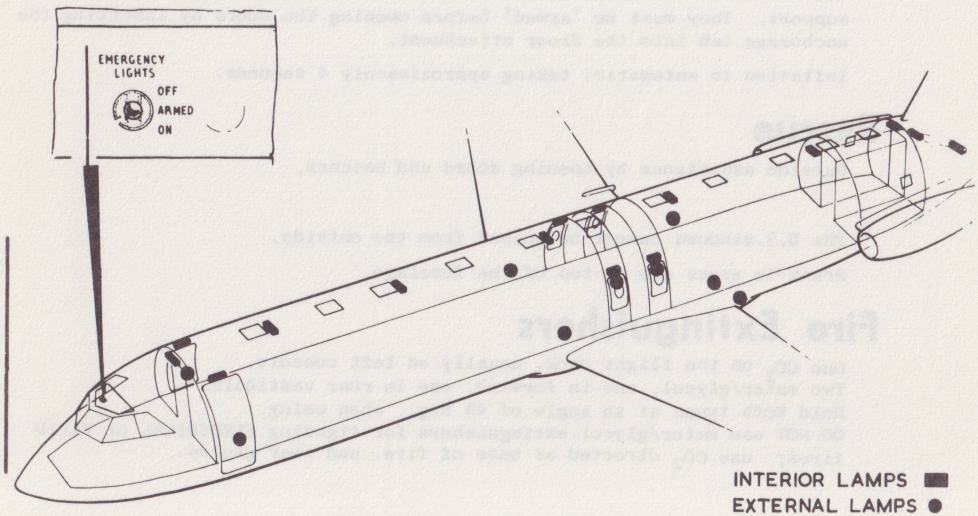
One at rear of cabin, usually in aisle side of toilet bulkhead.

Axe

One, usually in forward vestibule.

Emergency Lighting

Lamps, with their own battery supply, centrally controlled by a switch on the flight deck roof, illuminate essential areas inside and outside the aircraft. Under all normal circumstances the switch should be set at ARMED. EXIT lamps and the flight deck roof lamp can be removed and used as portable torches.



Emergency Lights
Figure 1

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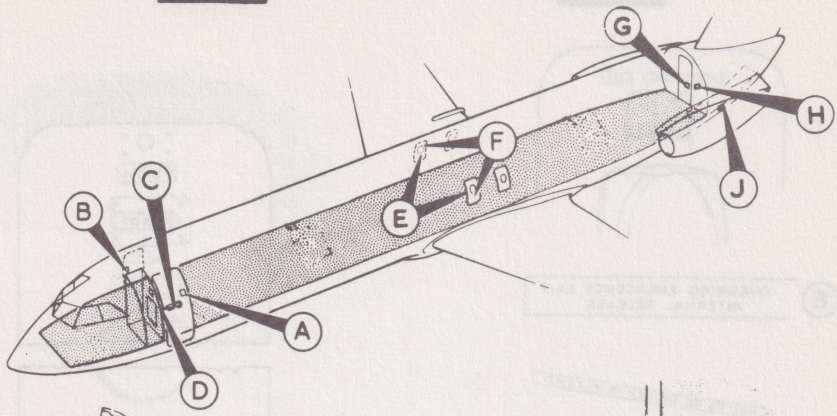
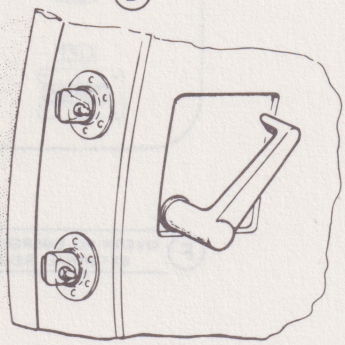
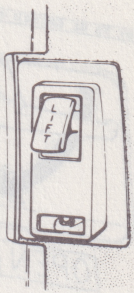
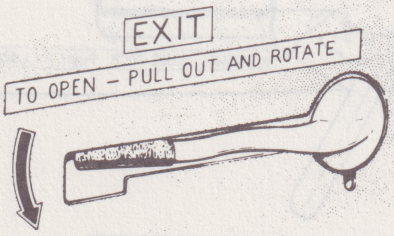




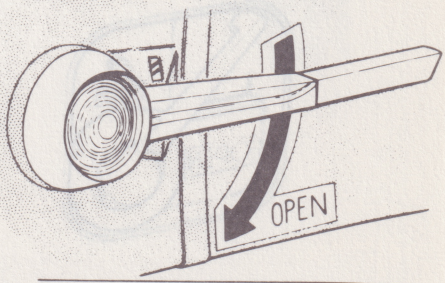
(A) FORWARD PASSENGER DOOR HOOK RELEASE HANDLE



(B) GALLEY SERVICE DOOR HOOK RELEASE HANDLE

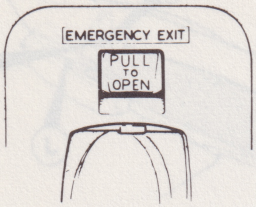


(C) FORWARD PASSENGER DOOR EXTERNAL HANDLE (SERVICE DOOR EXTERNAL HANDLE SIMILAR)

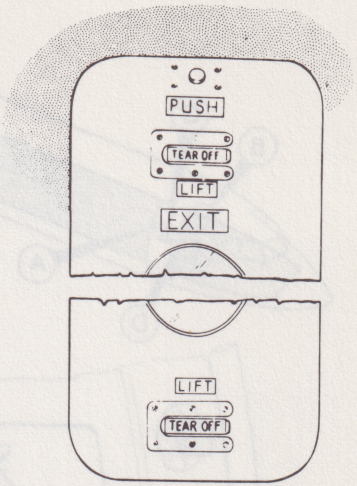


(D) FORWARD PASSENGER DOOR INTERNAL HANDLE (SERVICE DOOR INTERNAL HANDLE SIMILAR)

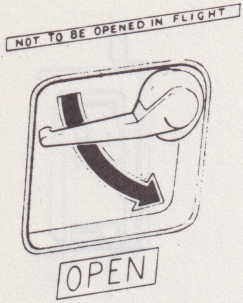
Emergency Doors and Hatches (1)
Figure 2



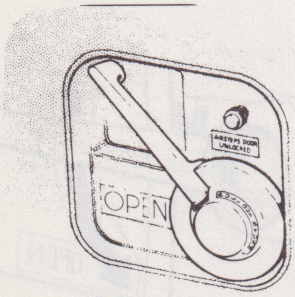
(E) OVERWING EMERGENCY EXIT INTERNAL RELEASE



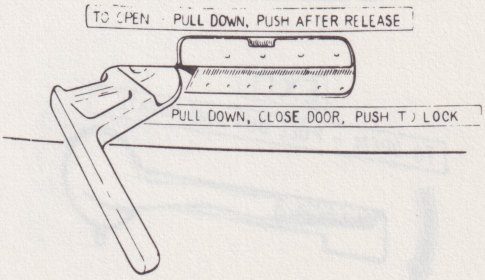
(F) OVERWING EMERGENCY EXIT EXTERNAL RELEASE



(G) REAR PRESSURE BULKHEAD DOOR INTERNAL HANDLE (EXTERNAL HANDLE SIMILAR.)



(H) VENTRAL STAIRWAY INTERNAL HANDLE



(J) VENTRAL STAIRWAY EXTERNAL HANDLE

Emergency Doors and Hatches (2)
Figure 3

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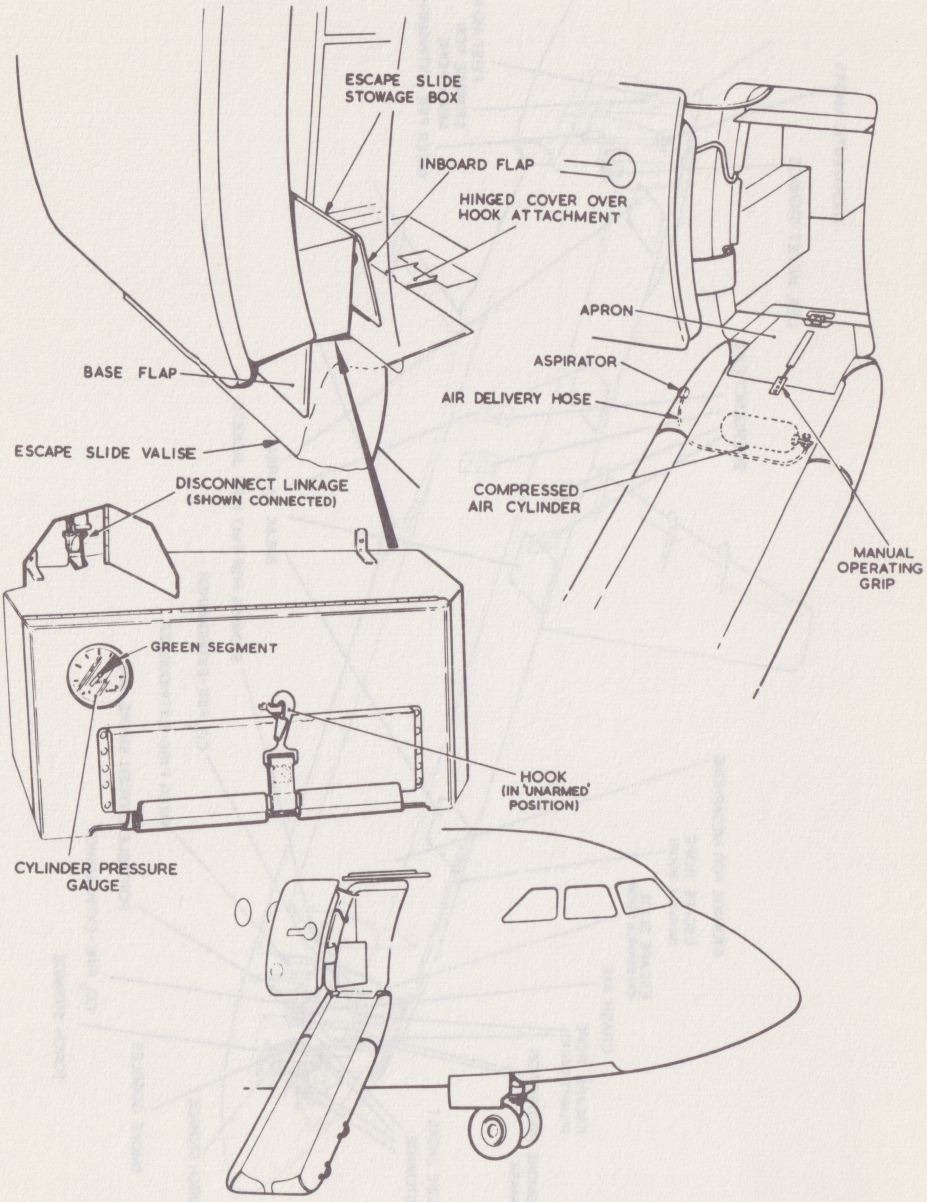

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Escape Slide
Figure 4

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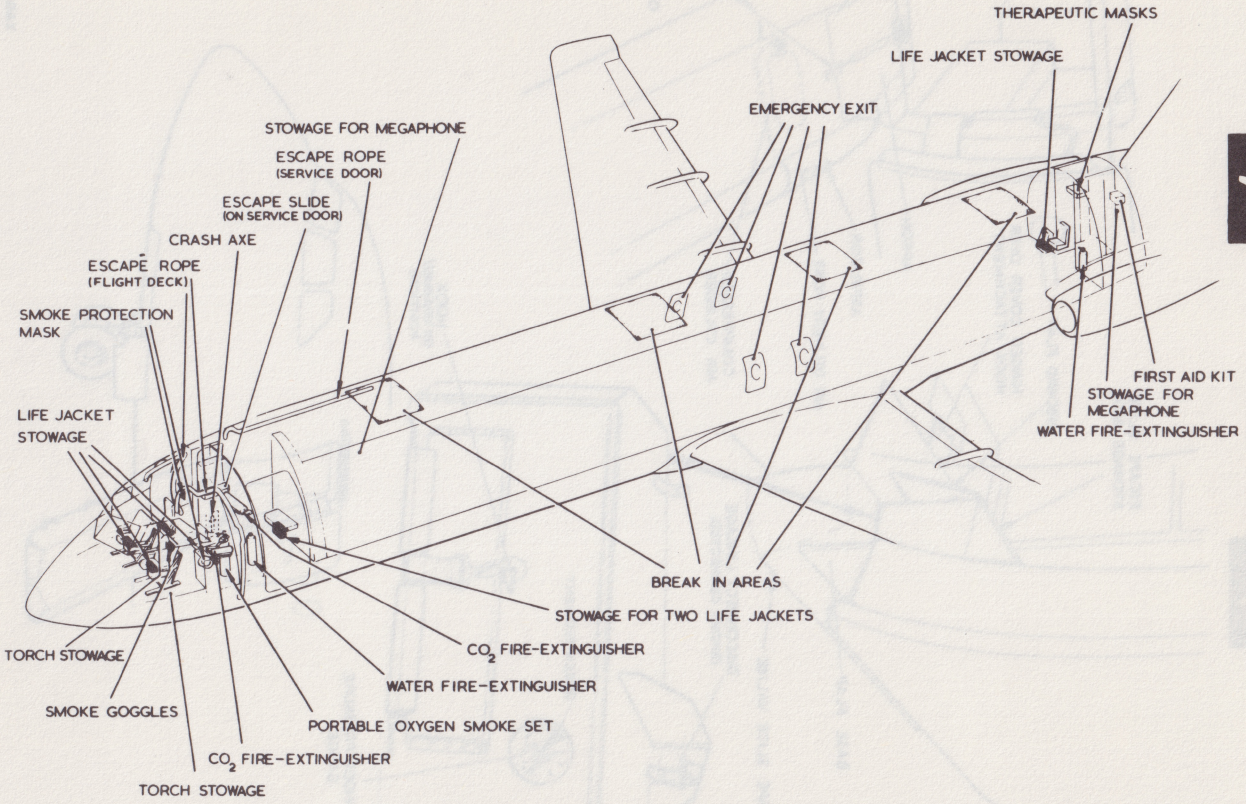

Emergency Equipment and Break-in Areas
Figure 5

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CLEANING AND POLISHING

General

The various areas of the aircraft should be cleaned and, where necessary, polished in accordance with the following information:-

You Can

Vacuum-clean carpets in-situ; there are electrical sockets in the galley areas to facilitate this.

You Must Not

1. Direct water into safety and discharge valves and de-icing exit louvres.
2. Wash mechanisms after they have been lubricated; wash first.
3. Use toxic solvents in poorly-ventilated areas.
4. Use chlorinated solvents; both trichlorethylene and carbon tetrachloride can be INJURIOUS to HEALTH.
5. Wash furnishing fabrics unless unavoidable; 'dry-clean' them.
6. Spin-dry furnishing fabrics after flame-proofing; that would extract the proofing solution.
7. Mechanically-buff the aircraft skin; friction-heat could remove the aluminium coating.

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Aircraft Exterior - Washing Conditions

1. Protective covers fitted to:-

   Pitot Heads and Static Vents)
   Cooler and Air Intakes)
   Engine Intakes and Jet Pipes) See 1-5-0
   Thrust Reversers) PARKING AND
   APU Exhaust) MOORING
   Angle of Airflow Sensor Vanes)

2. Aircraft, unpressurized, on hard standing.

3. D.V. Windows and all doors closed.

4. Flying control surfaces in normal attitude.

Materials

Washing Agents - Aircraft Skin

1.	Ardrox 6025	Use 1 part to 9 parts water
2.	Stripalene 266B	Use to makers instructions

Metal Skin Polishes

3.	Jove Wadpole K2	To be hand-applied - no buffing allowed
4.	Hendon 'B'	
5.	Dockers R8263	
6.	Swan Brand	

Protective Skin Polish

7.	Jove Aerowax	Apply after polishing

(Cabin) Window Polishes

8.	Polish No.1	For removing scratches. (See Section 3-4-0 for limitation)
9.	Polish No.2 or 2A	Use after scratch-removal
10.	Polish No.3	Final polish - mix with warm water

Furnishing Cleaners and Proofing Agents

11.	Ardrox 6012	For hard surfaces - 1 part cleaner to 5 parts water
12.	Stripalene 280	For soft surfaces - solution as Item 11
13.	Cirrasol AR	For anti-static treatment of carpets - use 2% in water and apply by spray, 2 pints solution per 14 sq.yds.
14.	Nonidet A10	As Item 13 but, use only 1%

For flame-proofing furnishing fabrics, use solution of 5 lb. borax and 5 lb. boric-acid in 10 gallons of water.

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Suppliers

Items 1 and 11	Brent Chemicals Ltd., Commerce Road, Brentford, Middlesex.
Items 2 and 12	Sunbeam Anti-corrosives Ltd., Central Avenue, West Molesey, Surrey.
Items 3 and 7	Valay Industries Ltd., Davis Road, Chessington, Surrey.
Item 4	Titanine Ltd., Colindale, London, N.W.9.
Item 5	Cellon-Docker, 380, Richmond Road, Kingston-upon-Thames, Surrey.
Item 6	Carr, Day and Martin, New Southgate, London, N.1.
Items 8, 9 and 10	I.C.I. (Plastics) Ltd., Welwyn Garden City, Herts.
Item 13	I.C.I.(Dyestuffs Division), Blackley, Manchester.
Item 14	Shell Chemical Co., St.Helens Court, Great St.Helens, London, E.C. 3.

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SPECIAL CHECKS

After Heavy or Overweight Landing

The extent of inspection necessary to ascertain the damage sustained after a heavy or overweight landing is governed largely by the nature of the landing, and stresses involved. Any decision taken in this respect, therefore, must always be subject to the discretion and judgement of the person with whom the responsibility rests for certifying the condition of the aircraft. For these reasons, the following checks should be regarded as being only for information and guidance. Therefore, before completing the inspection after a heavy landing, it is advisable to obtain reports from the crew of the aircraft or, for example, airfield control and other observers, in order to establish the events and conditions before and after landing.

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UNDERCARRIAGE

1. General examination of main and nose undercarriage structure and attachment points, together with main undercarriage doors and uplocks.

   The nosewheel half-hubs and tyres should be checked for damage, distortion, correct pressures and security.

WINGS

2. Visible (i.e. lower), wing root to centre section joint for damage, distortion or signs of movement.
3. Fuel tanks areas for signs of fuel leaks.
4. Root, leading edge section and root fairing for distortion.

FUSELAGE

5. Fuselage skin below wind line between trailing edge of wings and engine bearer mounting frame for signs of diagonal buckling.
6. Skin at base of fin for distortion.
7. Air conditioning equipment bay access panels and fairings for distortion.

POWER PLANTS

8. Engine stub fairings and access panels for distortion and buckling.
9. Top panels of engine cowling for distortion and buckling.

Provided that no damage is found in any of these areas the aircraft may be considered serviceable. If damage is evident, carry out a comprehensive check as detailed in the aircraft Maintenance Manual.

After Flight Through Turbulent Air

The following is the recommended inspection to be carried out whenever a report is made that an aircraft has flown through extremely turbulent air or encountered high 'g' forces or suffered severe buffeting in flight.

ENGINE NACELLES

1. Nacelle skin in the vicinity of the power plant attachment brackets, for buckling and loose or pulled rivets.
2. Nacelle attachment lugs, swinging link and fuselage brackets for cracks, sheared bolts and deformation.
3. Engine cowlings for distortion and correct open and close action.
4. Engine suspension links for cracks, sheared bolts and deformation.
5. Thrust strut attachment for damage, distortion and security.

WINGS

6. Upper and lower skin panel joints for distortion and buckling.
7. Top surface outboard of rib 17 for buckles and skin distortion.
8. Skin panels for fuel leaks.
9. Leading edge for buckling.
10. Top surface of the trailing-edge falsework for buckling.
11. Undercarriage main attachment fittings for cracks and distortion.

WING TO FUSELAGE

12. Fuselage skin around the centre section for diagonal buckling.
13. Leading edge and trailing edge spar webs of the centre section for distortion.
14. Fuselage skin adjacent to the leading edge and trailing edge of the mainplane for buckling.

FUSELAGE

15. Flight deck glazing and surrounds, for damage and distortion.
16. Horizontal lap joints and skin on the top of the fuselage over the centre section and at the fin attachments, for buckling and loose rivets. Skin around the window apertures, service and inspection panels for distortion.
17. Door surrounds for cracks and distortion.
18. Rear pressure bulkhead and engine support beams for distortion and loose or pulled huckbolts and rivets.
19. Skin around the APU for buckling.
20. Fuselage skin in the fin area for buckling.
21. Hydraulic reservoirs for security and leaks.

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NOSE UNDERCARRIAGE BAY

22. Fuselage skin aft of the rear bulkhead for buckling and pulled rivets.

MAIN UNDERCARRIAGE

23. Uplock mechanism for satisfactory condition.

AILERON

24. Surface for buckling.

FLAPS

25. Flap and leading-edge skin adjacent to the end ribs for buckling and loose rivets.
26. Skin for buckling.
27. Flap actuator for security of mounting and attachment of torque tube.

FIN

28. Skin for buckling, pulled and loose rivets.
29. Tailplane actuator mounting for cracks, distortion and loose bolts.

RUDDER

30. Skin for buckling.
31. Rudder for binding on the stub.

TAILPLANE

32. Skin for buckling.
33. Leading edge for buckling.
34. Tailplane actuator ball nut mountings for condition and security.
35. Tailplane beak for cracks and distortion.

ELEVATORS

36. Skin for buckling.

EQUIPMENT

37. Emergency equipment for correct stowage.
38. Aerials for security and condition.

If any damage is found carry out a comprehensive check as detailed in the aircraft Maintenance Manual.

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After Lightning Strike

The following instructions cover the inspection to be performed whenever a lightning strike or static electricity discharge from an aircraft is reported. A preliminary en-route strike check is to be accomplished at the first opportunity following the incident, while a more comprehensive strike check is to be performed at the first base at which the aircraft terminates a scheduled flight.

NOTE: This instruction does not imply that the repair of known damage may be deferred. The deferring of such repair will be dependent on specific limits and/or the effect of the damage on the airworthiness of the aircraft.

Lightning strikes usually result in two types of damage; that caused by the actual strike, and that caused by the discharge of static electricity which follows the strike. It is also possible that heavy static discharges may occur without the aircraft having been struck by lightning. A lightning strike usually causes burning of circular holes approximately $\frac{1}{8}$ inch in diameter, which may be clustered in one locality or scattered over a large area. On the engines, it can cause tracking of the bearings. Results of a lightning strike may also be indicated by burnt or discoloured skin, or rivets. Evidence of lightning strikes usually appears more prevalent in the fuselage nose section, and other leading edges.

Evidence of static discharge usually appears more prevalent on trailing edges, under the lower aft fuselage area, radio aerials and on the main plane and fin and tailplane tips and trailing edges. The effects of static discharge may occur as localized pitting or burning and may even result in circular holes approximately $\frac{1}{4}$ inch in diameter.

Cases have occurred in which aircraft components have become strongly magnetized due to the aircraft having been struck by lightning. It is probable that during the lightning discharge, heavy electric currents flow in the metal airframe structure. The magnetic field produced by such electric current is the cause of magnetization, this being an undesirable factor in the vicinity of the compass.

1. Check the engines, cowlings and nacelle stubs for evidence of burning, pitting or static discharge. If tracking of the engine bearings is suspected, inspect the oil scavenge filters and magnetic chip detectors (4-1-0).
2. Check the exterior of the fuselage for signs of burning, pitting or static discharge, paying particular attention to the nose, tail, lower fuselage and windscreen areas.
3. Visually inspect the ailerons, elevators and rudder, including tabs, for signs of static discharge, burning or pitting, paying particular attention to trailing edges and hinge areas.
4. Visually check the surfaces of the wings, fin and tailplane for signs of burning, pitting or static discharge, paying particular attention to wing tips, tailplane tips, wing joints, trailing edges and flap trailing edges.

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5. If the undercarriage was extended at the time of the strike, visually inspect the lower part of the undercarriage for signs of static discharge.
6. Visually check the condition of all static dischargers and radio aerials.
7. Check the operation of all radio and navigation equipment, paying particular attention to the accuracy of the compass system.

   NOTE: If radio maintenance personnel are unavailable, this check can be carried out by the flight crew.

8. Carry out an operational check of the following:

   (a) Navigation lamps.
   (b) Landing lamps.
   (c) Oscillating beacons.
   (d) Ice inspection lamps.

9. Check the fire extinguisher fuses for condition. If any indicator fuse shows a 'discharged' condition then the respective fire extinguisher bottle pressure release disc and indicator pins must be checked. Replace any fire extinguisher bottles that may have been discharged.

Provided no damage is found, the aircraft may be considered serviceable.

In the event of damage being found, a comprehensive check must be carried out as detailed in the aircraft Maintenance Manual.

After Violent Nosewheel Shimmy

The following is the recommended inspection to be carried out whenever a report is made that an aircraft has been subjected to violent shimmy of the nosewheels.

NOTE: This check should be carried out before any attempt is made to taxi or tow the aircraft.

NOSE LANDING GEAR

Examine nose landing gear structure and attachment points, wheels and tyres.

Examine torsion link assembly including quick-disconnect pin and steering jacks, hoses, signal input and follow-up mechanism.

MAIN LANDING GEAR

Examine main landing gear structure and attachment points, torsion links, wheels and tyres.

NOTE: Provided no defects are found, the aircraft may be considered serviceable.

If any damage is found, carry out a comprehensive check as detailed in the aircraft Maintenance Manual.

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POWER SUPPLY

General

Electrical power can be supplied on the ground either from the APU-driven generator, or from an approved ground power unit.

Often, it will be more convenient to run the APU. The unit is simple to operate, and its generator will accommodate all electrical demands for operation of aircraft systems.

Also, the APU will supply sufficient air to cool or heat the cabin as required via the normal air conditioning system (see 1-10-0).

The ground power unit, if used, must be one approved for use on the BAC One-eleven aircraft to ensure that it is within the limits for regulation, waveform, voltage and frequency modulation, transient voltages and ripple content demanded by the consumer equipment.

You Can

1. Normally start APU on the aircraft batteries or ground-use-only equivalents. Only an approved external 28-volt d.c. supply may be connected to APU GROUND POWER PLUG.
2. Run APU, but NOT start it, during refuelling/defuelling.
3. In emergency, shut down APU from the flight deck or from the external fire and shut-down panel.

You Must Not

1. Connect to the AIRCRAFT GROUND POWER PLUG any supply other than an approved 200/115 volt, 400-c/s, 3-phase (phase rotation A-B-C).
2. If maintenance work is to be done, introduce power until you have taken adequate precautions to safeguard personnel from potentially dangerous areas. Remember, 200/115 VOLTS can be LETHAL.
3. Plug in connectors in wet or dirty condition.
4. Disconnect power plugs before switching off the supply.

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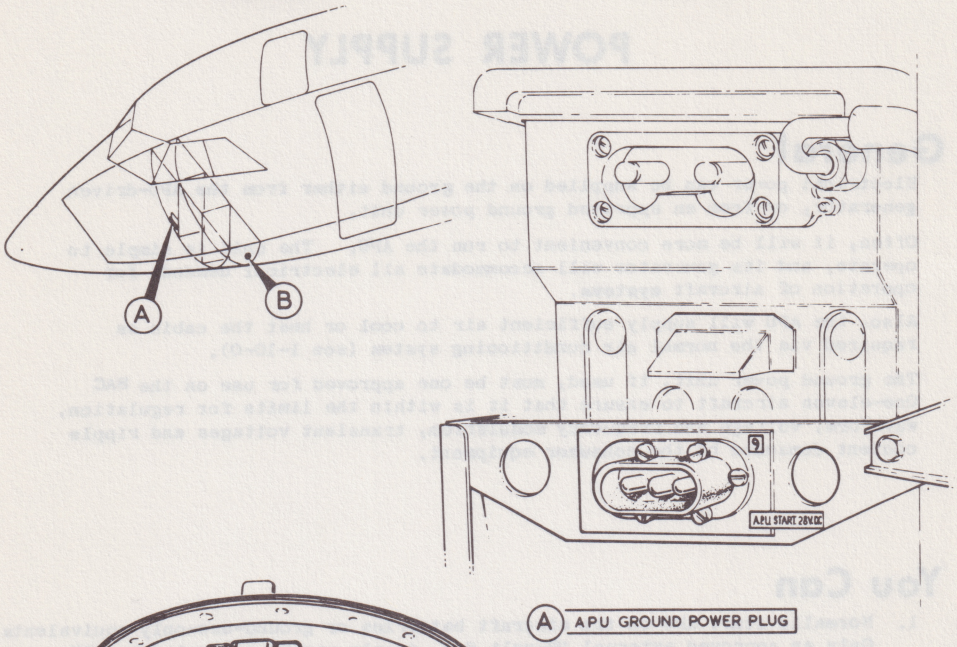
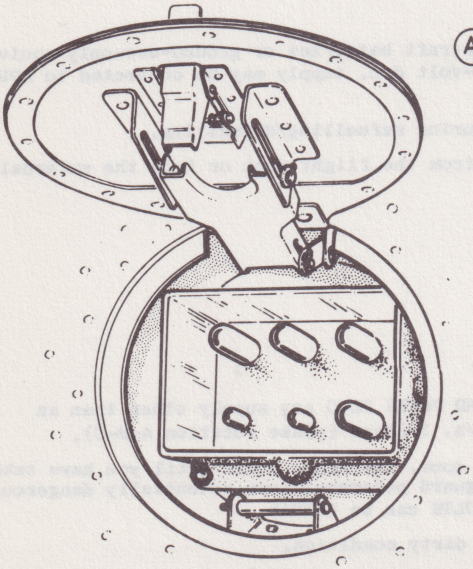


(A) APU GROUND POWER PLUG



(B) AIRCRAFT GROUND POWER PLUG

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External Power Plugs
Figure 1

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GROUND POWER

Connection

1. Connect to aircraft - socket and plug to be clean and mate firmly.
2. Switch on supply, check that GROUND POWER COUPLED indicator light comes on.
3. Set FREQ/VOLTS SELECT switch to EXT and check that the correct voltage and frequency are indicated.
4. Ensure that aircraft is 'electrically safe'.
5. Set BATTERY switch to ON; the BATTERY indicator should move to ON, also the DC FAIL and Nos.1 and 2 generator BUS FAIL lights come on.
6. Move GROUND POWER switch to CLOSE, and release; the DC FAIL and Nos. 1 and 2 generator BUS FAIL lights should now be out.
7. Check that the correct DC VOLTS are indicated.
8. Set BATTERY switch to OFF, if prolonged use of ground power is anticipated, to avoid overcharging the batteries.

Disconnection

1. Check BATTERY switch at ON.
2. Move GROUND POWER switch to TRIP, and release; Nos.1 and 2 generator BUS FAIL lights should come on. The DC FAIL light may or may not come on at this stage, according to the d.c. load and battery charge state.
3. Set BATTERY switch to OFF; Nos.1 and 2 generator BUS FAIL and DC FAIL lights should now be out, and the battery indicator OFF.
4. Switch off the supply, check that the GROUND POWER COUPLED indicator light is out.
5. Disconnect power supply socket without wrenching.

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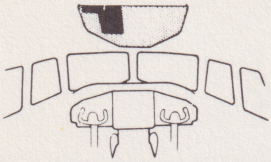

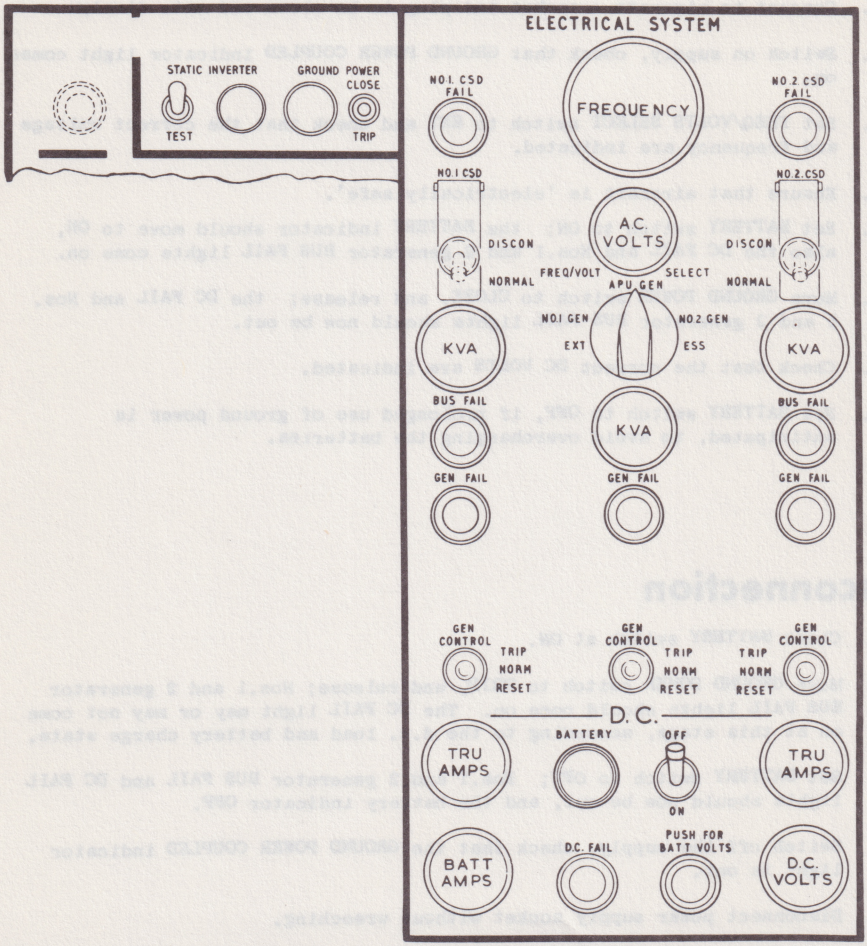

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Ground Power Controls and Indicators

Figure 1

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AUXILIARY POWER

Before Starting APU

1. Check battery charge state; if low, connect 28-volt d.c. ground supply to APU GROUND POWER PLUG.
2. KVA indicator must read zero.
3. Generator control switch set at NORMAL.
4. APU air delivery valve switch set at CLOSED.
5. When FUSE DUCT warning test button is pressed, air system FAIL lights must come on; when released, go out.
6. When STUB DUCT FAIL buttons are pressed, air system FAIL lights must come on; when reset, go out.
7. Ensure that there is fuel in the left wing tank.
8. Press-to-test oil LP warning light.
9. Check fire warning and protection:-

EXTERNAL FIRE & SHUTDOWN PANEL

(a) APU BOTTLE FIRED indicator (early models only) must be clear.

(b) SHUTDOWN switch at NORMAL.

If APU is to be run with flight deck unattended, leave its access panel open.

FLIGHT DECK

(c) Check APU FIRE BOTTLE DISCHARGE indicator displays amber.

(d) Set the APU fire AUTO/MANUAL switch, on roof panel E, to MANUAL.

(e) Pull FIREBELL switch; its self-contained light must come on.

(f) Set APU FIRE HANDLE switch to test; the fire control handle light must come on, and bell remain silent. Push in FIREBELL switch; its light must go out.

(g) Again set APU FIRE HANDLE switch to TEST; the control handle warning light must come on, and the bell ring.

Starting APU

1. Set engine START MASTER switch to START.
2. Set APU CONTROL SWITCH to ON; the FUEL VALVE indicator must read OPEN.
3. Press PUSH TO START button; the START indicator should first read START, then black and move on to RUN. A steady rise in indicated TGT should be experienced during the start period, which should not exceed 1 minute. If the APU fails to run, cancel the starting cycle and allow 4 minutes to elapse before repeating the starting drill.

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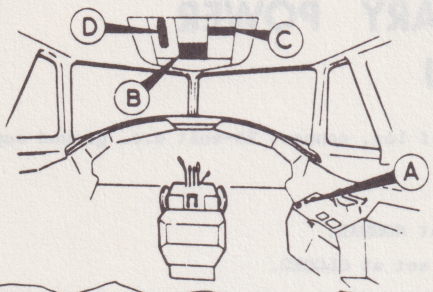
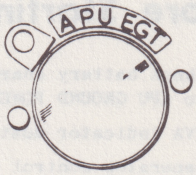
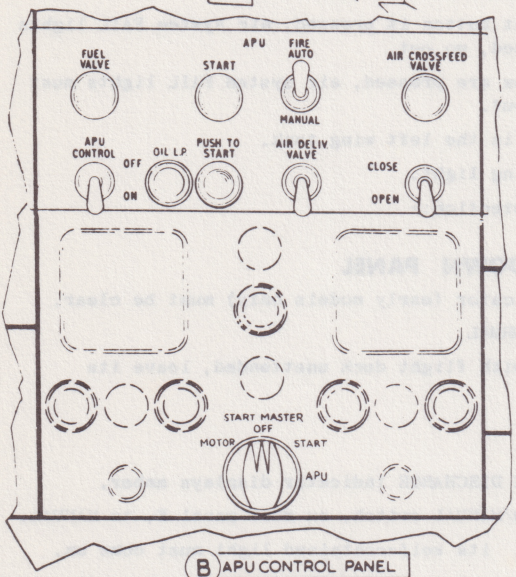
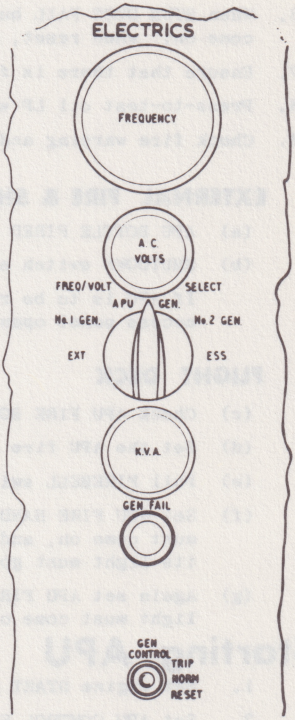




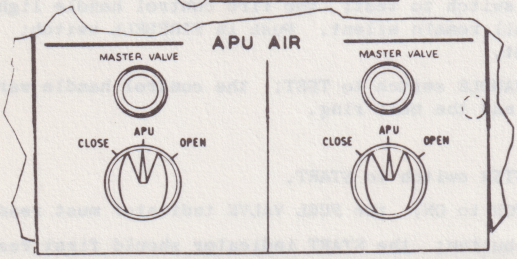
A EXHAUST GAS TEMP IND.



B APU CONTROL PANEL



D APU GENERATOR CONTROLS



C MASTER VALVE SWITCHES

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APU Controls and Indicators
Figure 1

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Normal Shutdown

1. Set air conditioning left-hand MASTER VALVE switch to CLOSED.
2. Set APU AIR CROSSFEED VALVE switch to CLOSE; check that indicator reads CLOSED.
3. Set APU AIR DELIVERY VALVE to CLOSE.
4. Set APU CONTROL switch to OFF; check that FUEL VALVE indicator reads CLOSED, and the START indicator is blank.

Emergency Shutdown - No Fire

Move the OVERSPEED switch (on the external fire and shutdown panel) to TEST. This supplies an artificial overspeed signal, causing automatic shut-down.

Emergency Shutdown - Fire

Move the SHUTDOWN switch (on the external panel) to FIRE, and the adjacent FIRE BOTTLE switch to EXTINGUISH.

Alternatively, on the flight deck, pull and turn APU fire control handle; this will automatically shut down the APU and operate the fire extinguisher system.

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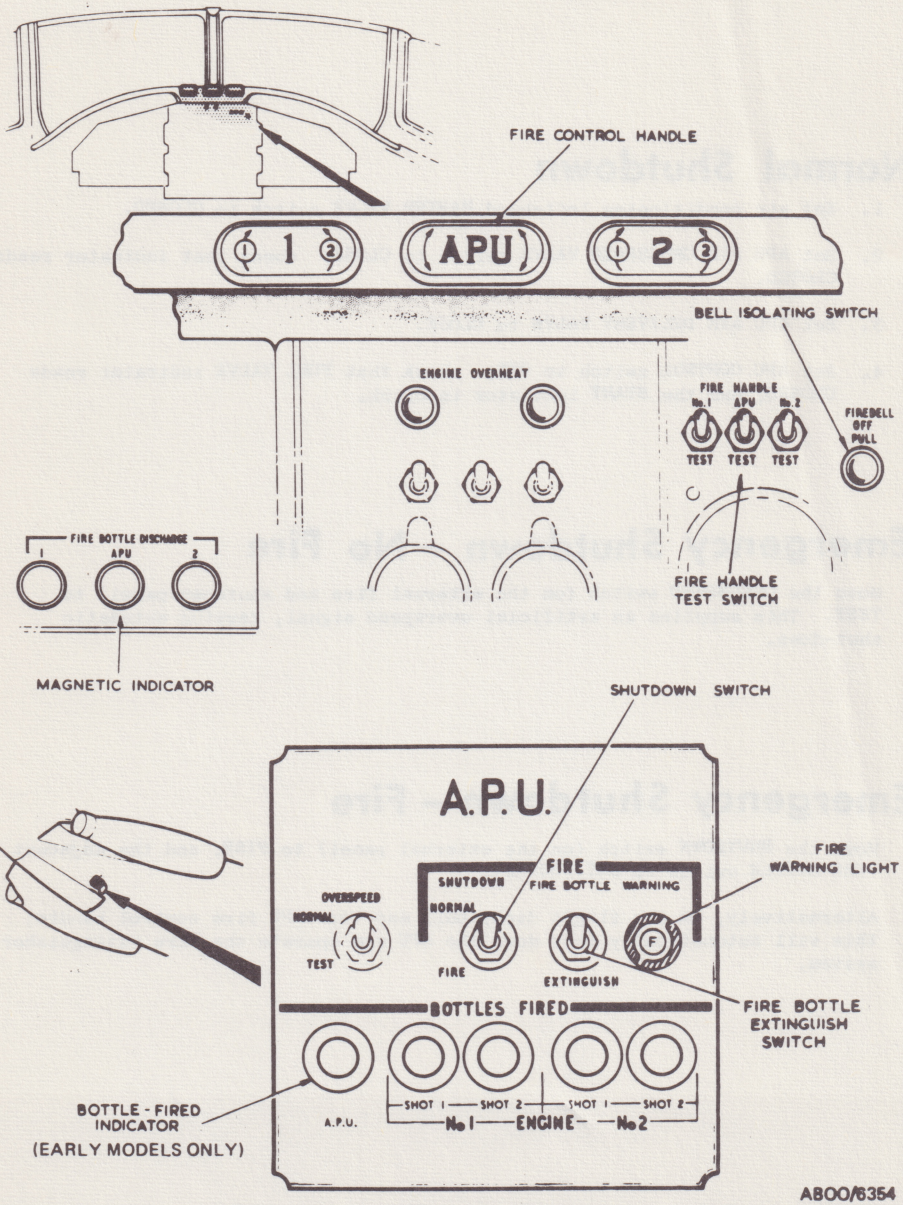

APU Emergency Shut-down and Fire Controls

Figure 2

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AIR CONDITIONING

General

The aircraft interior can be air conditioned while on the ground, either by the APU, or by an external conditioning unit. The most convenient method will often be to run the APU.

By APU

1. Press down and turn the AIR DUMP VALVE manual control knob fully to OPEN.

2. Move and hold the FLIGHT DECK and CABIN temperature selector switches to DEC, until their adjacent indicators read mid-way between COLD and ½ open; release the switches.

3. Start the APU (refer to 1-9-2).

4. Set the APU AIR DELIV VALVE switch to OPEN, and the adjacent temperature selector knob to NORMAL/COOLER/WARMER as required.

5. Set the AIR CONDITIONING left-hand MASTER VALVE selector knob to APU, wait 5 seconds, and set the right-hand knob to APU.

6. Move the temperature selector switches to AUTO.

7. Check that the indicated AIR INLET temperatures are being maintained within the green sectors.

Remember

To close the AIR DUMP VALVE when preparing the aircraft for flight.

By Ground Rig

Connect supply to inlet shown in Fig.2; the AIR DUMP VALVE must be open during conditioning as described in 'By APU' (above).

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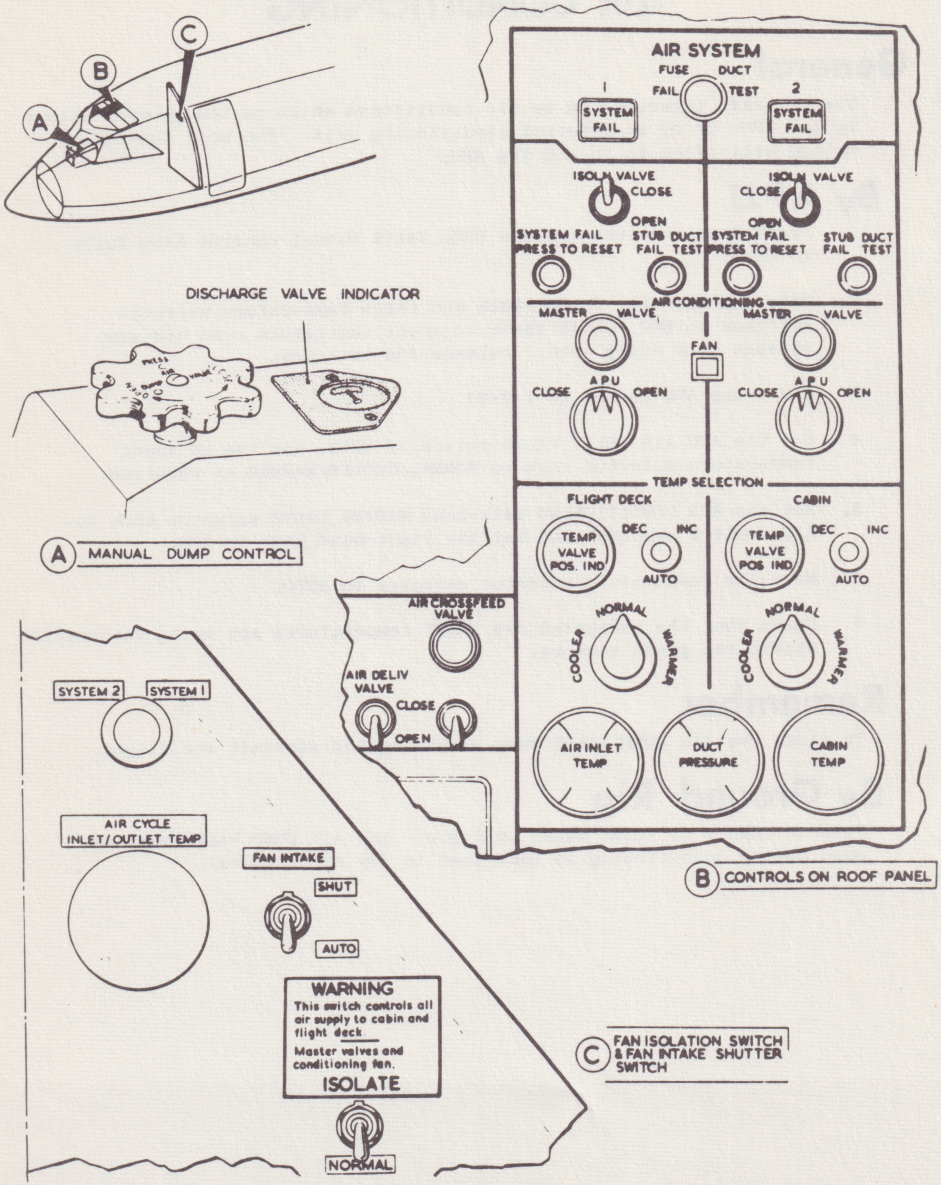

Air Conditioning Controls and Indicators
Figure 1

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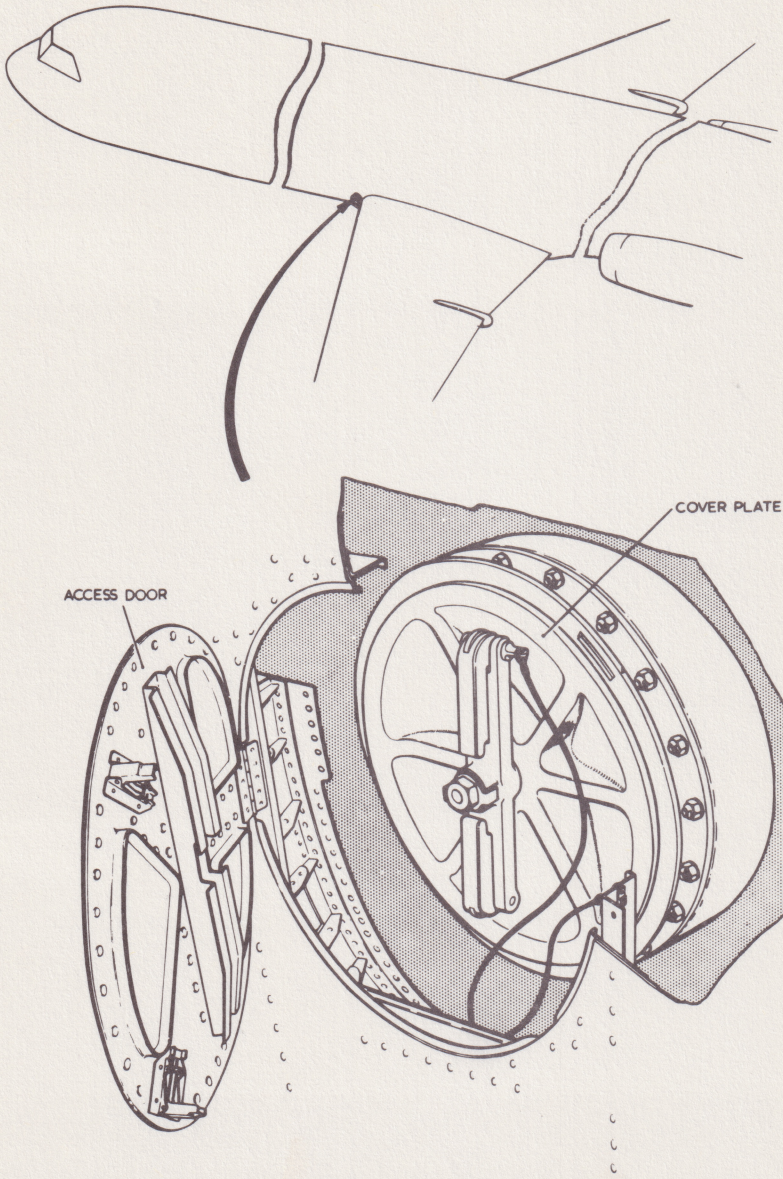

Air Conditioning Ground Rig Connection
Figure 2